



ONTARIO AGRICULTURAL COLLEGE
EXPERIMENT STATION

BULLETIN LIX

GREEN FODDER FOR SWINE

BY THOMAS SHAW PROFESSOR OF AGRICULTURE

PUBLISHED BY THE DEPARTMENT OF AGRICULTURE
March 14 1891

TORONTO
PRINTED BY WARWICK & SONS

MINISTER OF AGRICULTURE

HON. JOHN DRYDEN, TORONTO.

Ontario Agricultural College and Experimental Farm, Guelph,
under control of the Minister of Agriculture.

OFFICERS.

JAMES MILLS, M.A.	President.
THOMAS SHAW.	Professor of Agriculture and Farm Superintendent.
C. C. JAMES, M.A.	Professor of Chemistry.
J. HOTES PANTON, M.A., F.G.S.	Professor of Geology and Natural History.
F. C. GRENSIDE, V.S.	Professor of Veterinary Science.
H. H. DEAN, B.S.A.	Professor of Dairy Husbandry.
E. LAWRENCE HUNT, B.A.	Assistant Resident and Mathematical Master.
CAPTAIN WALTER CLARKE.	Instructor in Drill and Gymnastics.
C. A. ZAVITZ, B.S.A.	Assistant Superintendent of Experiments.
GEORGE HARCOURT, B.S.A.	Assistant Chemist.
A. MCCALLUM,	Bursar.

ADVISORY BOARD.

A. BLUE.	Deputy Minister of Agriculture, Toronto.
JOHN I. HOBSON	Mosborough, County of Wellington.
JOHN McMILLAN, M.P.	Constance, County of Huron.
EDWARD JEFFS	Bond Head, County of Simcoe.
J. S. SMITH	Ailsa Craig, County of Middlesex.
G. B. BOYCE	Norham, County of Northumberland.
D. A. DOWLING.	Appleton, County of Carleton.
WM. DONALDSON.	Woodstock, County of Oxford.

Chairman of Board

JOHN I. HOBSON.

Secretary of Board

A. BLUE.

BULLETIN LIX.

GREEN FODDER FOR SWINE.

This experiment began on June 7, 1890, and closed October 8, covering a period of 123 days. The after experiment growing out of it lasted 40 days. Its primary object was to ascertain whether green fodder used as a food adjunct in summer along with a suitable meal ration effected a saving in the cost of producing pork, and if so to what extent. A second object was to ascertain whether a large or a small quantity of the green food used in this way furnished the cheaper ration. A third object was to test the correctness of the theory advanced by some scientists, which claims that some bulky food mixed with a meal ration in feeding swine secures a more thorough digestion of the meal, since it prevents impaction of the same in the stomach.

THE ANIMALS SELECTED. The animals selected for the experiment were pure Berkshires and Berkshire grades, all bred upon the farm. There was one of the former in each group. The grades were by a pure Berkshire sire, out of a high grade Berkshire dam, and the pure breds were by the same sire. They were divided into three groups. Each group comprised three animals, two of which were barrows and one a sow. The individual animals in each group were from different litters, and one animal in each group was in every instance from the same litter. These litters were farrowed September 11, November 25 and December 1, 1889, the pure breds being the oldest. They were all in good store condition at the commencement of the experiment.

PERIOD OF PREPARATION. For one week before the experiment commenced, the pigs in the different groups were put upon the ration fed during the experiment. Before that time they had been fed very similarly on meal and refuse from the college.

FOOD AND FEEDING. The pigs in group No. 1 were fed all the meal they would take without waste. Those in group No. 2 were fed about three-fourths as much meal as the pigs in group 1, and also a quantity of green fodder. The pigs in group 3 were fed about one-third as much meal as those in group 1, and about twice as much green fodder as those in group 2. The aim was to make the quantities of meal used in these two instances exactly two-thirds and one-third respectively of the amount fed to the pigs in group 1, but slight variations were caused by the consumption by the latter of quantities of meal not always the same from day to day. When definite changes were made in the quantities of food fed, they were

Guelph,

President.
Superintendent.
Chemistry.
Natural History.
Agricultural Science.
Husbandry.
Medical Master.
Gymnastics.
Experiments.
Natural Chemist.
Bursar.

, Toronto.
Wellington.
of Huron.
of Simcoe.
Middlesex.
Lancashire.
of Carleton.
of Oxford.

always made at the weighing periods, which were every two weeks. The meal ration consisted of ground pease, two parts; ground barley, one part; ground oats, one part, and wheat middlings, one part. These proportions were by weight. The green food consisted of clover, oats and vetches, corn and millet, as these came in season. It was cut into lengths of about one-half-inch by running it through a cutting box, and when fed the meal was mixed with it. Water was always given along with the food.

ESTIMATED VALUE OF THE FOOD. The food was estimated at the current market values in Guelph, viz.: pease, 55 cents per bushel; barley, 50 cents; oats, 35 cents; and wheat middlings, \$15 per ton. Eight cents per 100 lb. were allowed for grinding the meal. The price of the meal mixture used was, therefore, one cent per pound. The green food was charged at \$2 per ton.

FOOD EATEN. The following table gives the food consumed, (1) by each individual animal daily on an average throughout the experiment, and (2) the whole amount consumed by the pigs in each group:

	Group 1.	Group 2.	Group 3.
	lb.	lb.	lb.
By each Animal	4½ meal.	{ 3.09 meal. 1.85 gr. fd.	{ 1.39 meal. 3.77 gr. fd.
By each Group	1,520 "	{ 1,140 meal. 628 gr. fd.	{ 514 meal. 1,392 gr. fd.

INCREASE IN WEIGHT. The next table gives the average weight of the pigs in each group, (1) at the commencement of the experiment, (2) at its close, the average individual increase in weight, and the average individual daily increase:

	Group 1.	Group 2.	Group 3.
	lb.	lb.	lb.
Weight at commencement.....	151.00	147.30	147.30
Weight at close.....	248.30	221.30	167.00
Average increase	97.30	74.00	19.70
Average daily increase79	.60	.16

VALUES. The third table gives (1) the average value of one animal in each group at the commencement of the experiment, (2)

y two weeks.
ground bar-
gs, one part.
consisted of
e in season.
g it through
it. Water

as estimated
55 cents per
middlings,
for grinding
therefore, one
ton.
d consumed,
oughout the
pigs in each

Group 3.

lb.
1.39 meal.
3.77 gr. fd.
514 meal.
1,392 gr. fd.

the average
ment of the
e in weight,

Group 3.

lb.
147.30
167.00
19.70
.16

lue of one
riment, (2)

the cost of food for one average animal throughout the experiment (3) the average value of one animal in each group at the close of the experiment, (4) the average individual gain or loss, and (5) average individual gain or loss per cent. (a) on value of animals at commencement of the experiment, and (b) on value of animals at commencement of the experiment with market value of food included :

	Group 1.	Group. 2.	Group 3.
	\$	\$	\$
Value at commencement.....	6.79	6.63	6.63
Cost of food	5.07	4.03	2.18
Value at close	12.17	10.84	7.10
Gain or loss	+ .31	+ .18	- 1.71
Gain or loss per cent. on animals.....	+4.56	+2.71	-27.00
Gain or loss per cent. on animals and food.	+2.61	+1.69	-19.41

The pigs were valued at \$4.50 per 100 lb. live weight at the commencement of the experiment, as prime animals brought \$5.25 per 100 lb. at that time. At its close the pigs in groups 1 and 2 were valued at \$4.90 per 100 lb., which was the market value, and those in group 3 were valued at \$4.25. As to condition the animals in group 1 were fat, and those in group 2 prime, while those in group 3 were not improved in condition. It will also be observed that the market values had fallen in the meantime. The manure is supposed to form more than an offset to the cost of the labor.

AFTER EXPERIMENT. At the close of the experiment proper on October 8 a second experiment was commenced to show the probable effects of feeding green food upon pork-making during the subsequent fattening period. During this experiment all the pigs were fed a ration similar in kind to that fed to those pigs in group No. 1 during the first experiment. This after experiment continued forty days, and at its close on November 17 the pigs were sold at \$4.10 per 100 lb. live weight. The detailed results would unduly enlarge this bulletin: It may be mentioned however that although there was a slight relative increase in the rate of gain with the pigs in groups 2 and 3 as compared with those in group 1, it was not at all marked. The prices for prime pork had in the meantime fallen from \$4.50 to \$4.10 per 100 lb., so that the pigs during this period were fed at an actual loss.

CONCLUSIONS.

The following are the more important conclusions from the experiment :

1. That while (1) pigs fed for 123 days on a suitable meal ration and housed in summer, increase in weight at a rate of 64 per cent., (2) pigs fed on two-thirds the quantity of the same meal ration, the balance of the food being made up of green fodder cut and mixed with the meal, increase at a rate of 50 per cent., and (3) pigs fed on one-third the quantity of the same meal ration, the balance of the food being made up of green fodder cut and mixed with the meal, increase at a rate of only 13.37 per cent., the labor of feeding being also relatively greater where green fodder is given.
 2. That when the prices of food and pork are the same as in this experiment, the gain from feeding pigs, as in group 1 for 123 days in summer will be but 4.56 per cent. on the first cost of the animals, as in group 2 but 2.71 per cent., and when fed as in group 3 the loss will be 27 per cent.
 3. That in pork making the questions of market values and of the best season to market are of great practical importance.
 4. Farmers should study to avoid marketing their pork in the months of October and November when prices are usually lower than at any other season of the year.
 5. That a ration of which the major portion consists of green food, as in the case of that fed to the pigs in group 3, will fail to bring them into a marketable condition.
 6. That of the rations given to the pigs in the three groups in this experiment the meal ration fed to those in group 1 has proved in every way the most satisfactory, hence
 7. If feeding a bulky fodder along with meal to pigs is any aid to digestion, it must be given in a less proportion than that used in feeding the pigs in group 2 in this experiment.
-

al ration
per cent.,
tion, the
d mixed
pigs fed
balance
with the
feeding

e as in
for 123
of the
a group

and of

in the
lower

green
fail to

in this
ved in

ay aid
ed in